

NAS 1.53/3:96-OSS-01



National Aeronautics  
and Space Administration

FEBRUARY 13, 1996  
NRA 96-OSS-01

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# RESEARCH ANNOUNCEMENT

## RESEARCH IN PLANETARY GEOSCIENCES

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PROPOSALS DUE: APRIL 26, 1996

ja 0830-H-05 96-015584

# **RESEARCH IN PLANETARY GEOSCIENCES**

**PLANETARY GEOLOGY AND GEOPHYSICS**

**PLANETARY MATERIALS AND GEOCHEMISTRY**

NASA Research Announcement  
Soliciting  
Proposals for Basic Research  
For the Period Ending  
April 26, 1996

NRA-96-OSS-01  
Issued: February 13, 1996

Office of Space Science  
National Aeronautics and Space Administration  
Washington, DC 20546-0001

## **RESEARCH IN PLANETARY GEOSCIENCES**

### **PLANETARY GEOLOGY AND GEOPHYSICS PLANETARY MATERIALS AND GEOCHEMISTRY**

This NASA Research Announcement (NRA) solicits proposals for basic research in the areas of Planetary Geology and Geophysics (PGG) and Planetary Materials and Geochemistry (PMG). Previously, solicitations for these programs were issued separately; this year proposals are solicited under a single NRA titled Planetary Geosciences. Participation in this program is open to all categories of organizations, both domestic and foreign: industry, educational institutions, other nonprofit organizations, NASA centers, and other Government agencies. Proposals may be submitted at any time during the period ending April 26, 1996. Proposals will be evaluated by scientific peer review during July 1996. Announcements regarding selection for funding in Fiscal Year (FY) 1997 will be made after October 1, 1996.

Further details relevant to this program are included in the appendices to this Announcement. Appendix A provides technical and program information in the general area in which proposals are sought, plus amendatory guidance to Appendix B, applicable only to this NRA. Appendix B contains the basic guidance needed for preparation of solicited proposals in response to an NRA. Appendix C contains guidance needed for requesting funds for major equipment items used in support of proposed research. Appendix D, attached here, contains formats for proposals submitted in response to this NRA.

These appendices will be available after February 13, 1996, on the Office of Space Science home page on the World Wide Web. The URL address is <http://www.nasa.gov/office/oss/>.

It is estimated that the NASA funding level for the Planetary Geology and Geophysics and Planetary Materials and Geochemistry Programs in FY 1997 will be approximately \$12 million each and that the level of funding will support approximately 100 - 150 research investigations in each program, including New Solicited Proposals, Renewal Proposals and Supplement Proposals. It is anticipated, on the basis of recent historical results, that there will be between three and twelve new starts in each program selected for funding in FY 1997. The selection of any proposals is contingent on the availability of FY 1997 funds.

This NRA features many significant changes from previous versions. It replaces all Planetary Geology and Geophysics Program and Planetary Materials and Geochemistry Program announcements of previous years. It is recommended that the proposer carefully review this document before submitting a proposal. Failure to follow the guidelines outlined here may make the proposer ineligible for funding through this NRA in FY 1997.

The following items apply only to this Announcement.

Identifier: NRA 96-OSS-01

Submit All Proposals to: Lunar and Planetary Geoscience Review Panel  
(NRA 96-OSS-01)  
The Lunar and Planetary Institute  
3600 Bay Area Boulevard  
Houston, TX 77058  
(713) 486-2149

Copies Required: New Solicited or Renewal: 14  
Supplement Proposals: 8

**All proposal submissions must contain 4  
additional copies of Appendix D, Pages i - iv.**

Selecting Official: Director, Solar System Exploration Division  
Office of Space Science

Additional information and paper copies of the NRA and appendices can be obtained from:

Discipline Scientist Planetary Geology and Geophysics Program  
Code SLC  
National Aeronautics and Space Administration  
Washington, DC 20546-0001  
202-358-0295 Telephone  
202-358-3097 Fax

or

Discipline Scientist Planetary Materials and Geochemistry Program  
Code SLC  
National Aeronautics and Space Administration  
Washington, DC 20546-0001  
202-358-0284 Telephone  
202-358-3097 Fax

Your interest and cooperation in participating in this effort are appreciated.



Wesley T. Huntress, Jr.  
Associate Administrator  
for Space Science

Enclosure

## LIST OF APPENDICES

- APPENDIX A: Description of Opportunity
- APPENDIX B: Guidelines for Responding to NASA Research  
Announcements (NRA) For Solicited Basic Research  
Proposals
- APPENDIX C: Major Equipment Requests
- APPENDIX D: Formats for Proposals Submitted to Research in Planetary  
Geosciences

**FORMATS FOR PROPOSALS SUBMITTED TO THE  
PLANETARY GEOSCIENCES PROGRAM**

**SUBSTITUTIONS NOT PERMITTED**

**NRA 96-OSS-01**

Log No. \_\_\_\_\_

Date Received: \_\_\_\_\_

Do not write in this space

GRANT NUMBER \_\_\_\_\_

**PLANETARY GEOLOGY AND GEOPHYSICS**

☐

Planetary Geology

☐

Geologic Mapping

☐

Planetary Geophysics

☐

Remote Sensing

☐

Solar System Dynamics

☐

Planetary Cartography

☐

(Check only one for Planetary Geology and Geophysics)

**PLANETARY MATERIALS AND GEOCHEMISTRY**

☐

Mineralogy/  
Petrology

☐

Analytic and  
Experimental  
Geochemistry

☐

Isotope  
Geochemistry

☐

(Check only one for Planetary Materials and Geochemistry)

**NEW  
SOLICITED**

☐

**RENEWAL**

☐

**SUPPLEMENT  
(PROGRESS  
REPORT)**

☐

(Check only one)

Proposal Title: \_\_\_\_\_

Principal Investigator (Name): \_\_\_\_\_

Institution: \_\_\_\_\_

Type of Organization: \_\_\_\_\_  
(Profit, non-profit, university, etc.)

Address: \_\_\_\_\_

City/State/Zip Code: \_\_\_\_\_

Telephone: (\_\_\_\_\_) \_\_\_\_\_ Fax: (\_\_\_\_\_) \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Institutional Authorization Official: \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Address: \_\_\_\_\_

City/State/Zip Code: \_\_\_\_\_

Telephone: (\_\_\_\_\_) \_\_\_\_\_ Fax: (\_\_\_\_\_) \_\_\_\_\_

### OTHER PERSONNEL

Institutional Contact or Business Representative: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

List the names and institutions below (use additional sheets if necessary).

Co-Investigators:

Institution:

Collaborators:

Institution:

Proposed Duration of Project: \_\_\_\_\_ Months

Budget Request:

Year 1	Year 2	Year 3	Year 4	Year 5	Total Request
\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____



## PROPOSAL SUMMARY

PRINCIPAL INVESTIGATOR

(Name, Address,  
Telephone, Email)

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Co-INVESTIGATORS:

(Name and Affiliation Only)

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PROPOSAL TITLE:

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ABSTRACT: (Single-space, typed). Include: (a) Objectives and justification for work; (b) Accomplishments of prior year's work; (c) Outline of proposed work and methodology; (d) One or two relevant recent publications authored by the PI or Co-I.

**DO NOT USE ADDITIONAL SHEETS.**

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GRANT / CONTRACT / RTOP # \_\_\_\_\_

**SUMMARY BUDGET FOR ALL YEARS**

TITLE: \_\_\_\_\_

PRINCIPAL INVESTIGATOR: \_\_\_\_\_

DURATION REQUESTED: \_\_\_\_\_ YEARS

START DATE: \_\_\_\_\_ END DATE: \_\_\_\_\_

SUMMARY OF FULL PROPOSED COSTS: (nearest \$ 0.1 K)

1. SALARIES AND WAGES	\$ _____
2. FRINGE BENEFITS	\$ _____
3. SUPPLIES AND MATERIALS	\$ _____
4. EQUIPMENT PURCHASES	\$ _____
5. COMPUTER TIME (paid with PI funds)	\$ _____
6. OTHER SERVICES	\$ _____
7. PUBLICATIONS AND COMMUNICATIONS	\$ _____
8. TRAVEL	\$ _____
9. OTHER	\$ _____
10. SUBTOTAL (ITEMS 1 - 9)	\$ _____
11. OVERHEAD (INDIRECT COSTS)	\$ _____
12. SUBTOTAL FULL DURATION BUDGET (LINES 10 + 11)	\$ _____
13. INSTITUTIONAL CONTRIBUTIONS	\$ _____
14. CARRYOVER FROM PREVIOUS YEAR	\$ _____
15. TOTAL FUNDS REQUESTED FOR ALL YEARS FROM NASA (LINE 12 MINUS LINES 13 + 14)	\$ _____

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SUMMARY OF FUNDING REQUEST (NEAREST 0.1 WORKYEAR, NEAREST \$0.1K)

1. SENIOR PERSONNEL	_____ wy	\$ _____
2. TECHNICAL SUPPORT	_____ wy	\$ _____
3. OTHER	_____ wy	\$ _____
4. TOTALS	_____ wy	\$ _____

GRANT/CONTRACT NO./RTOP # \_\_\_\_\_

**BUDGET SUMMARY FOR YEAR \_\_\_\_\_**  
(PROVIDE ONE SHEET FOR EACH YEAR OF REQUESTED FUNDING)

TITLE:

PRINCIPAL INVESTIGATOR & INSTITUTION:

SUMMARY OF FULL PROPOSED COSTS: (nearest \$ 0.1 K)

1.	SALARIES AND WAGES	\$ _____
2.	FRINGE BENEFITS	\$ _____
3.	SUPPLIES AND MATERIALS	\$ _____
4.	EQUIPMENT PURCHASES	\$ _____
5.	COMPUTER TIME (paid with PI funds)	\$ _____
6.	OTHER SERVICES	\$ _____
7.	PUBLICATIONS AND COMMUNICATIONS	\$ _____
8.	TRAVEL	\$ _____
9.	OTHER	\$ _____
10.	SUBTOTAL (ITEMS 1 - 9)	\$ _____
11.	OVERHEAD (INDIRECT COSTS)	\$ _____
12.	SUBTOTAL BUDGET (LINES 10 + 11)	\$ _____
13.	INSTITUTIONAL CONTRIBUTIONS	\$ _____
14.	CARRYOVER FROM PREVIOUS YEAR	\$ _____
15.	TOTAL FUNDS REQUESTED FOR ALL YEARS FROM NASA (LINE 12 MINUS LINES 13 + 14)	\$ _____

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SUMMARY OF FUNDING REQUEST (NEAREST 0.1 WORKYEAR, NEAREST \$0.1K)

TASK SHORT TITLE	SENIOR PERSONNEL	TECHNICAL SUPPORT	OTHER COSTS
1. _____	_____ / _____	_____ / _____	_____
2. _____	_____ / _____	_____ / _____	_____
3. _____	_____ / _____	_____ / _____	_____
4. _____	_____ / _____	_____ / _____	_____

## **CURRENT AND PENDING RESEARCH SUPPORT FROM ALL OTHER SOURCES**

This list should include all current and pending research support from the following sources:

1. Any proposal for which the PI of this proposal is also the Principal Investigator.

2. Any proposal, regardless of the PI, which accounts for more than 25% of the time of the Principal Investigator of this proposal and other personnel essential to this proposal.

Please provide this information in the following format:

I. Name of Principal Investigator

A. Current FY 96 Support

B. Pending Proposals (Excluding this proposal but including other proposals).

For both current and pending support provide information on:

1. Source of Support and Principal Investigator
2. Project Title and Short Abstract (50 words or less)
3. Award Amount and Period of Performance
4. Person-Months and Level of Effort

II. Names of Co-Investigators

As outlined above, provide information on all Current and Pending Support. Collaborators are not considered essential to the proposal. Disclosure of current and pending research support is not required for collaborators.

III. Other agencies to which this proposal, or parts thereof, has been submitted.

## CONTENTS

### COVER SHEETS

TITLE PAGE	i
OTHER PERSONNEL	ii
PROPOSAL SUMMARY WITH ABSTRACT	iii
BUDGET SUMMARY	iv
CURRENT AND PENDING SUPPORT	-
TABLE OF CONTENTS	-

### RESEARCH OBJECTIVES

### DETAILED WORK PLAN

### EXPECTED RESULTS

### RELEVANCE OF PROPOSED WORK

### ROLE OF PI, CO-I, COLLABORATORS AND OTHER PERSONNEL

### DATA REQUIREMENTS

### SUPPORTING FACILITIES

### REFERENCES

### RESUME OF PRINCIPAL INVESTIGATOR AND CO-INVESTIGATORS

### DETAILED BUDGETARY AND ADMINISTRATIVE INFORMATION

### CERTIFICATIONS

CERTIFICATION REGARDING DRUG FREE WORKPLACE	-
CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS	-
CERTIFICATION REGARDING LOBBYING (IF REQUIRED)	-

### APPENDICES

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**CERTIFICATION REGARDING  
LOBBYING**

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As required by S 1352 Title 31 of the U.S. Code for persons entering into a grant or cooperative agreement over \$100,000, the applicant certifies that:

- (a) No Federal appropriated funds have been paid or will be paid by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, in connection with making of any Federal grant, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal grant or cooperative agreement;
- (b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, Member of Congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subgrants, contracts under grants and cooperative agreements, and subcontracts), and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by S1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

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Organization Name

AO or NRA Number and Title

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Printed Name and Title of Authorized Representative

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Signature

Date

---

Printed Principal Investigator Name

Proposal Title

## CERTIFICATION REGARDING DRUG-FREE WORKPLACE REQUIREMENTS

This certification is required by the regulations implementing the Drug-Free Workplace Act of 1988, 34 CFR Part 85, Subpart F. The regulations, published in the January 31, 1989 Federal Register, require certification by grantees, prior to award, that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the agency determines to award the grant. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of grants, or government-wide suspension or debarment (see 34 CFR Part 85, Sections 85.615 and 85.620).

### I. GRANTEES OTHER THAN INDIVIDUALS

A. The grantee certifies that it will provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing a drug-free awareness program to inform employees about --
  - (1) The dangers of drug abuse in the workplace;
  - (2) The grantee's policy of maintaining a drug-free workplace;
  - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
  - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will
  - (1) Abide by the terms of the statement; and
  - (2) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction;
- (e) Notifying the agency within ten days after receiving notice under subparagraph (d) (2) from an employee or otherwise receiving actual notice of such conviction;
- (f) Taking one of the following actions, within 30 days of receiving notice under subparagraph (d) (2), with respect to any employee who is so convicted --
  - (1) Taking appropriate personnel action against such an employee, up to and including termination; or
  - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or Local health, Law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f)

B. The grantee shall insert in the space provided below the site(s) for the performance or work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

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Check ☐ if there are workplaces on file that are not identified here.

### II. GRANTEES WHO ARE INDIVIDUALS

The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance in conducting any activity with the grant.

Organization Name

AO or NRA Number and Title

Printed Name and Title of Authorized Representative

Signature

Date

Printed Principal Investigator Name

Proposal Title



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**CERTIFICATION REGARDING  
DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS  
PRIMARY COVERED TRANSACTIONS**

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This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR Part 85, Section 85.510, Participants' responsibilities. The regulations were published as Part VII of the May 28, 1988 Federal Register (pages 19160-19211). Copies of the regulations may be obtained by contacting the U.S. Department of Education, Grants and Contracts Service, 400 Maryland Avenue, S.W. (Room 3633 GSA Regional Office Building No. 3), Washington, D.C. 20202-4725, telephone (202) 732-2505.

**A. The applicant certifies that it and its principals:**

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three-year period preceding this application been convicted or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or Local) with commission of any of the offenses enumerated in paragraph A.(b) of this certification;
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or Local) terminated for cause or default; and

**B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.**

**C. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lowered Tier Covered Transactions (Subgrants or Subcontracts)**

- (a) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principles is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department of agency.
- (b) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

---

Organization Name

---

AO or NRA Number and Title

---

Printed Name and Title of Authorized Representative

---

Signature

---

Date

---

Printed Principal Investigator Name

---

Proposal Title



# NASA Research Announcement (NRA)/Announcement of Opportunity (AO) Mailing List Update

**If your current address is NOT up-to-date, please fill out this form completely.**

*This is the update form for the NASA Office of Space Sciences (OSS) NRA/AO mailing list. Please fill out CONTACT INFORMATION completely. Check only those that apply in Institution Type and Discipline. Fold the form, secure with tape, and mail it back to the address on the reverse side. Proper postage must be applied.*

Please check which announcements you would like to receive:

- ☐ 1. NASA Research Announcements (basic, non-flight, on-going research)  
☐ 2. Announcements of Opportunity (specific space flight mission)

Must check one, please include code number from mailing label:

- ☐ 1. Please **add** my name to the mailing list.  
☐ 2. Please **remove** my name from the mailing list (please attach mailing label)  
☐ 3. Please **update** my current listing.

## CONTACT INFORMATION

If your address has changed or your mailing label is incorrect, please provide **COMPLETE** contact information.

Code Number: (obtain from mailing label)	Salutation: (Mr., Mrs., Ms., Dr., Prof., etc.)	Suffix: (Ret., PhD., Jr., III, etc.)
First Name:	MI:	Last Name:
Organization:		
Division / Department:		
Street:		
City:	State:	Zip:
Telephone No:	Fax No:	
E-Mail Address:		Internet Address:
Country: (foreign addresses, please specify)		

## Institution Type

(check only those that apply)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> 1. College or University          | <input type="checkbox"/> 4. Minority Business     | <input type="checkbox"/> 7. Other Government Agency |
| <input type="checkbox"/> 2. Minority College or University | <input type="checkbox"/> 5. NASA HQs/Center       | <input type="checkbox"/> 8. Private Industry        |
| <input type="checkbox"/> 3. Foreign Addressee              | <input type="checkbox"/> 6. Nonprofit Corporation | <input type="checkbox"/> 9. Small Business          |

## Societies:

- ☐ A. American Astronomical Society      ☐ B. American Geophysical Union      ☐ C. Others \_\_\_\_\_

## Discipline:

(check only those that apply)

### 1. Astronomy and Astrophysics

- ☐ A. Theory and Modeling  
☐ B. Instrumentation (Technology Dev)  
☐ C. Laboratory Astrophysics  
☐ D. Data Analysis (Archival)  
☐ E. Observational Programs

### 2. Solar System Exploration

- ☐ A. Planetary Atmospheres and Astronomy  
☐ B. Planetary Materials and Geochemistry  
☐ C. Planetary Geology and Geophysics  
☐ D. Instrument Development  
☐ E. Origins of Solar Systems  
☐ F. Exobiology

### 3. Space Physics

- ☐ A. Cosmic and Heliosphere Physics  
☐ B. Solar Physics  
☐ C. Magnetospheric Physics  
☐ D. Iono-Thermo-Mesospheric Physics

### 4. Information Systems/Computer Science

- ☐ A. High Performance Computing and Networking  
☐ B. Scientific Data Analysis and Visualization  
☐ C. Science Data Storage and Management  
☐ D. Software Technology

Please Tape (Do not staple)

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PLACE STAMP  
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
OFFICE OF SPACE SCIENCE  
MAIL CODE SPI  
WASHINGTON, DC 20546-0001



**NASA  
OFFICIAL MAILING LIST  
UPDATE**

**END**

**10-18-96**